

## **RESEARCH METHODOLOGY**

This report is a synthesis of documentary research conducted at various libraries, manuscript repositories, and state and county agencies combined with the archaeological evidence provided by fieldwork and the analysis of the artifacts resulting from the fieldwork. This section outlines the techniques used in each of these three elements of the project.

### **Archival Research**

Archival investigations were intended to document the history of the site more thoroughly than had been done in previous investigations. The goals of the archival work were: to establish a basic chronology of ownership/tenancy for the site; to provide general information on tavern operations and County trends; and to obtain specific information that could be linked with the archaeological results. Map research, aerial photographs, land surveys and deeds, census, wills and probates, ledgers and daybooks, and tax assessment information were the primary materials used. Archeological background research was carried out at the Bureau of Archeology in Dover. Historic background was conducted at the Hall of Records in Dover, the Historical Society of Delaware, the Hagley and Winterthur Libraries, and the New Castle County Court House in Wilmington, and the University of Delaware Special Collections in Newark. Both the University of Delaware and Wilmington Public Libraries were used for researching secondary historical sources.

Since the project area to be studied lies along a roadway that has a long history as a transportation corridor, archival work was carried out that would provide information on the road itself. Historic maps, early road records (found in Court of Quarter Sessions documentation) and minutes of meetings of the Wilmington Turnpike Company were the primary sources used to document the history of Concord Pike and Rockland and Foulk Roads. Landowner deeds were another source of information on this topic.

Tavern license petitions for New Castle County were consulted to establish a basic chronology of proprietorship for the Tavern. More in-depth analysis of the petitions also provided information on the cost of licenses, spacing between taverns, evidence for female tavern keepers, and different classes of tavern keepers (i.e., owner operated and professional itinerant). Tavern ledgers and daybooks, supplemented by the petitions, were used to gain insight into basic tavern life and function, including prices, variety, and popularity of commodities served. Personal property inventories and probates of individual tavern keepers from various settings and time periods in New Castle County provided the basis for comparisons and analysis of the role and status of specific taverns and the individual keepers. This analysis also provides the basis for discussion on general classes of taverns and change in the role of taverns and agriculture through time. The methodology employed in this line of inquiry was extrapolated from South's functional classification of artifacts (South 1977) and on the frequency of specific types of materials, such as beds and bedding versus other types of furniture, as employed in the analysis of the John Ruth Inn (Coleman et al. 1990). Many of the primary and secondary

sources used also provided insight into agricultural trends in this area of New Castle County throughout the site's history.

### **Fieldwork**

The site was first cleared of brush and tall grass, then gridded into ten foot squares in order to allow control over the horizontal provenience of data recovered. Initial work focused on relocating the tavern/house and other features previously identified in the Phase I investigations. Test units, generally measuring five feet square, were excavated and labeled according to the coordinates of their northeast corners. The walls of the tavern/house were located and, as the configuration of the structure proved to be fairly complicated, indicating multiple periods of construction and renovation, it was primarily exposed by hand. Once the interior was sampled and it was determined that it had been filled with stone rubble, carpeting, and appliances, then capped with a thick layer of fill, a backhoe was used to remove most of the twentieth-century fill and debris from within the structure. This was done in order to look for evidence of basement features such as hearths, cisterns, and wells, and to excavate any sub-floor soils that might be encountered. Cement and brick flooring was removed from portions of the tavern/house basement. A series of test units were excavated outward from the foundation to the north, south, and west (Concord Pike lies to the east). The initial intention was to sample the plowzone in these areas and look for intact features. The soils proved to be much more complicated than expected, being composed of various fill levels, slag deposits, and pipe trenches. A long test trench was excavated by backhoe in the western portion of the site to more clearly determine the nature of the soil strata.

Initial testing in the field north of the tavern/house indicated that it had been covered with deep fill soil that could not be hand excavated. Four deep backhoe trenches were later excavated in the field (referred to throughout the report as the "north field"), revealing that large pieces of cement curbing, asphalt chunks, and massive stone boulders had been dumped here along with up to six feet of fill. This was all dumped over a pre-existing plowed surface. A sample of the buried plowzone was hand excavated from most of these trenches, producing a high proportion of modern twentieth-century materials. Therefore the remainder was not excavated. The trench excavations further revealed that the field was much lower than the landform on which the structure and associated features were situated.

Testing in the southern part of the site (the "south field") revealed several intact features at shallow depths. Hand excavation was used to sample much of the upper soil levels, excavate soil features, and outline several structural features. The remainder of the field was later stripped by a backhoe in order to further outline large features and look for any remaining features. The backhoe was also used to expose deep profiles through two large features (Features 12 and 43) and to remove large areas of asphalt from both the south and west fields. This was done to define the extents of structural features (Features 32, 33, 45, 64, 88, and 89) that extended under the asphalt and to look for any remaining features. It also served to remove overlying, previously tested soils from a buried A horizon in the west field. The backhoe was also used to remove twentieth-century rubble,

debris, and fill from Feature 12, a large oval structure to the west of the tavern/house. Most of the structure was exposed by hand, but the backhoe was used to remove some of the overburden. After initial hand testing, backhoe stripping was also used in the area immediately behind and west of the tavern/house to look for remaining features.

A midden and a portion of a buried yard surface located to the north of and in relative close proximity to the structure (the "north yard") were identified and excavated completely by hand. Nearly 100 percent of each was excavated. A well located just northeast of the tavern/house foundation and in close proximity to Concord Pike was noted in the Phase I report. It was not relocated during the hand excavations, but the ground stripping using the backhoe succeeded in uncovering it. The cement cap was removed by the backhoe and it was felt that, given the well's close proximity to the highway, backhoe excavation was the only safe option. The backhoe was used to generate a cross section of the well and each bucket full was examined for artifacts. Only the first couple of buckets produced soil; the remainder was stone rubble. As the backhoe was only able to go about 15 feet into the feature, an agreement with DelDOT was reached in which further machine excavation of this feature will be conducted when highway work commences and portions of the road will be closed to traffic.

Soil samples were collected for soil chemistry analysis from the plowzone, buried surfaces, the subsoil, and feature soils. At least one liter of soil was also collected for flotation from the midden and feature soils. All artifacts were bagged and labeled by unit coordinates or feature number and soil horizon or arbitrary excavation level. All soil profiles were drawn and described, using the Munsell Soil Color Charts. Test units, backhoe trenches, and soil and architectural features were mapped in profile and plan, and photographed.

### **Laboratory Procedures and Artifact Analysis**

Following completion of field investigations, the artifacts were cleaned, inventoried and curated according to Delaware curation standards.

The prehistoric artifacts were classified by cultural historical and functional types and by lithic raw material. All tools were identified in terms of established types--scrapers, bifaces, spear points, etc. Prehistoric lithics were separated according to raw material type. Other variables such as flake type, presence of cortex, presence of modification, etc. were noted. The presence of cortex refers to cobble cortex only, bedding lines were not considered to be cortex.

Historic artifacts were separated into four basic categories: glass, ceramics, metal and miscellaneous. The ceramics were identified as to ware type, method of decoration, vessel type (if possible) and separated into established types following South 1977. The dates used for assignment to a specific temporal period generally followed Miller 1992. All artifacts were cleaned with plain water except fragile materials such as bone, shell or metal, which were dry-brushed. The artifacts were catalogued according to material composition, such as glass, ceramic, metal, faunal, brick, etc. The oyster shell and brick

fragments were weighed rather than counted as this was felt to provide the most useful measure of comparison. Manufacture dates were determined when possible.

Sorted and identified items were entered into a database containing thirteen fields for refined provenience control and sorting by functional use and dates of manufacture. The initial field methodology called for collecting soil samples from each level of each unit, however because of the degree of plowzone disturbance by pipe trenches, filling and grading, only certain proveniences were submitted for soil chemistry analysis. These were generally the same proveniences selected for faunal analysis. The latter analysis identified faunal material by type (i.e., sheep, pig etc.), cut, and butchering technique.

In-depth analyses were used in addition to the basic descriptions of the historic materials. These included the distribution of artifact classes by functional categories, ceramic analysis according to relative proportion of refined versus unrefined wares, and formal distributions for ceramics and bottle glass. Standard typological categories such as ceramic ware type and functional categories based on South's (1977) classification were employed in the analysis. The latter classification system is designed to seek artifact patterning and identify activity areas by categorizing objects into broad functional categories such as kitchen, architectural, tobacco, clothing, personal, arms, and miscellaneous activities.

Mean Ceramic Dates, including Mean Beginning and Ending Dates, were calculated according to the procedure outlined by South (1977) and refined by Miller (1992). Redware is considered non-diagnostic and was not calculated into the Mean Dates. The Terminus Post Quem (TPQ) was established for sealed contexts. Artifact distribution maps were made for functional groups of artifacts, ceramic ware types and by manufacture dates for certain materials such as windowpane glass and nails. These maps were produced by totaling the number of these various items by provenience. Modern artifacts such as twentieth-century beer bottle fragments were excluded from the maps and discussions, although their presence is noted in the inventory. Appendix VI (in Volume II) lists all artifacts by provenience and was organized to reflect either spatial or temporal relationships.

Glass remains recovered from the Blue Ball Tavern site were initially sorted by glass color, shape and diagnostic glass blowing technologies, method of manufacture and function to assist in determining dates of manufacture and deposition (Hurst 1990). Glass shapes, colors produced by adding minerals to glass formulas, and the use of minerals to produce "clear" or colorless glass indicate function of the container or other item and provide a date range based on changing technology.

Diagnostic glass colors in the Blue Ball assemblage include the use of decolorizing minerals to produce colorless glass. These minerals include the following: magnesia, used most frequently for pre-1860 tablewares; lead, used in clear glass and first produced in American glass works in 1818; potash and soda for windowpanes, which was almost immediately replaced by a new lime-soda formula in 1864; and manganese, used circa 1880-1915. Generally, larger cylinder bottles in varying dark shades of ambers, greens

and aquas were liquor and ale containers. Medicinals were bottled in smaller aqua -- and occasionally in clear -- cylinder and rectangular shapes. Food product bottles and jars came into popular use during the 1850s and 1860s and were generally blown in aqua colors.

Basic datable glass blowing technologies illustrated by the Blue Ball glass assemblage include the following: free-blown glass, manufactured from ancient times and in common use in America until the 1860s; highly diagnostic contact molded glass produced from about 1810 until it was replaced by chilled iron molds in 1880; chilled iron molds, which combined developing technologies and methods and were in use from the 1870s until 1930; machine-made bottles, first commercially produced in 1907, but held by a license monopoly until 1918 and thus in limited use until that time; and modern glass including Duraglass, patented in 1940, and the most recently produced type of bottle known as glass cans, made in a light-weight near-plastic type of glass.

Dates of technological changes in glass blowing methods, types of bottle molds and their refinements, lip finishes and closures are documented by patents issued by the U. S. Patent Office after 1794. Records including registered patents, designs, and trademarks were used as the primary source for dating glass containers from the site. Applications for trademarks, including glass house trademarks filed with the Patent Office, were required to state the beginning date of the use of the trademark. The trademark was often blown into glass containers, and the beginning dates of embossed bottles recovered from the site were taken from this source. Probable end dates of manufacture, specifically if identified by glass house trademarks, were determined by later changes in trademarks. These dates can often be confirmed by histories published by glass company officials, which also provide dates of changes in technologies within the glass works and information about consolidation, dissolution, and company name changes within the glass industry.

A large American glass house merger in 1929 created the Owens-Illinois Glass Company and incorporated a large number of automatic machine-made bottle and jar works. During this merger, bottles and containers were coded on their bases with the glass house trade mark, an identifying plant number, a bottle mold number, and the date of manufacture. A large part of the assemblage of the glass remains from the Blue Ball Tavern site were modern and were either date coded, had the characteristic Duraglass stippling pattern on the bases or shoulders, or were the so-called glass cans.